

Taxonomic notes.—MIYABE and KUDO²¹ are investigating and recording material for a flora of Hokkaido, Japan, and five small fascicles have been published. In these fascicles 60 species are presented, new species being described in *Luzula*, *Eriophorum*, *Tofieldia* (3), and *Dactylostalix* (an orchid). In addition to new species there are several new names and combinations.

MIYAKE²², in connection with a study of fungi from China, includes in his published list of 56 species descriptions of 4 new species of Fungi Imperfecti, representing the following genera: *Coniothyrium*, *Melophia*, *Marsonia*, and *Cercospora*.

MAKINO,²³ in continuation of his studies of the flora of Japan, has published new species in *Scleria* (2) and *Utricularia*.

BLAKE²⁴ has described the following new genera of Compositae, chiefly Mexican: *Haplocalymma* (based on *Viguiera microcephala* Greenm.), *Phoebanthus* (to include *Helianthella grandiflora* T. and G. and *H. tenuifolia* T. and G.), and *Pionocarpus* (based on *Helianthella madrensis* Wats.); and also new species in *Gymnolomia*, *Viguiera* (2), *Perymenium* (3), and *Chrysactinia*.

ROBINSON²⁵ has described new species from Cuba, Mexico, and Guatemala in *Eupatorium* (5), *Brickellia*, *Verbesina*, and *Liabum*, in addition to new varieties, forms, names, and combinations.

MACBRIDE,²⁶ in connection with a study of the Borriginaceae of the Gray Herbarium, has found it necessary to make a number of new names and combinations, and has also described two new species of *Heliotropium*, both from Mexico.—J. M. C.

Morphology of Treubia.—CAMPBELL,²⁷ studying material of *Treubia insignis* collected at the original station near Tjibodas on Mount Gedeh, Java, finds that the archegonia, which occur in groups up to a dozen, have as many as 9 neck cells; that there is no clear line of demarcation between the deck and the ventral region; and that as many as 8 neck canal cells are sometimes present. GRÜN, studying the same form, reports as many as 16 neck canal

²¹ MIYABE, K., and KUDO, Y., Materials for a flora of Hokkaido. Pts. 2, 3, 4, 5. Trans. Sapporo Nat. Hist. Soc. 5:37-44, 65-80, 145-152; 6:1-9. 1915.

²² MIYAKE, I., Studien über chinesische Pilze. Bot. Magazine 27:45-54. 1913.

²³ MAKINO, T., Observations of the flora of Japan. Bot. Magazine 27:55-60. 1913.

²⁴ BLAKE, S. F., Compositae new and transferred, chiefly Mexican. Proc. Amer. Acad. 51:515-526. 1916.

²⁵ ROBINSON, B. L., New, reclassified, or otherwise noteworthy spermatophytes. Proc. Amer. Acad. 51:527-540. 1916.

²⁶ MACBRIDE, J. FRANCIS, Certain Borriginaceae, new or transferred. Proc. Amer. Acad. 51:541-548. 1916.

²⁷ CAMPBELL, DOUGLAS HOUGHTON, The archegonium and sporophyte of *Treubia insignis* Goebel. Proc. Nat. Acad. 2:30-31. 1916.

cells. The lack of demarcation between neck and venter, always notable in Jungermanniales, is here most pronounced. This character, taken in connection with the large number of neck canal cells, seems to suggest that the archegonium is primitive; that while other structures have made rapid strides forward, the archegonium has stood still, relatively speaking. The earliest stages of the embryo were not seen, but in the youngest stage a prominent haustorium, derived most probably from the hypobasal half of the fertilized egg, was present. The foot is not sharply delimited from the seta; this is, of course, a primitive character. The wall of the capsule is 3-layered and the apex is thickened into a pronounced beak, an advanced condition phylogenetically. CAMPBELL considers that *Treubia* is nearer the acrogynous liverworts than is any other anacrogynous form.—W. J. G. LAND.

Botanical microtechnique.—SMITH²⁸ gives a résumé of botanical microtechnique from the time of HOOKE to the present time, and treats the subject under three heads: from HOOKE to 1800; the technique of the English microscopists and the German botanists from 1800 to 1875; modern microtechnique from 1875 to the present time. For the first time the pioneer work of JOHN HILL has received the recognition it merits. HILL was one of the very few workers in botany during the exceptionally barren eighteenth century, and many of his methods were "rediscovered" after nearly 75 years. HILL successfully used maceration methods, and in a crude way fixed and hardened his material. He is beyond doubt the first botanist to use staining as an aid to determine structure, the stain being an alcoholic tincture of cochineal. He also understood and used mordants, injected vessels by boiling pieces of wood in green sealing wax, cut sections on a microtome, and cleared them in spirits of turpentine. The credit of first using paraffin for interstitial imbedding is given to FRANCOTTE, that of soap to PFITZNER, and that of celloidin to BUSSE. The history and evolution of the microtome is traced from 1770 to the present time, but no mention is made of the marvelously accurate rotary microtome which has succeeded that of MINOT.—W. J. G. LAND.

Influence of nutrition on development of sex organs.—NAGAI²⁹ has investigated the influence of nutrition on the development of the sex organs of *Osmunda regalis japonica* and *Asplenium Nidus*. Previously he had shown that factors of environment play important rôles in the sexual development of the gametophytes of *Ceratopteris thalictroides* and other ferns.³⁰ In the present

²⁸ SMITH, GILBERT MORGAN, The development of botanical microtechnique. Trans. Amer. Microsc. Soc. 34:71-129. figs. 18. 1915.

²⁹ NAGAI, ISABURO, On the influence of nutrition upon the development of sexual organs in the fern prothallia. Jour. Coll. Agric. Univ. Tokyo 6:121-164. pl. 10. figs. 7. 1915.

³⁰ NAGAI, ISABURO, Physiologische Untersuchungen über Farnprothallien. Flora 106:281-330. 1913.